

Provisional Data

Anode Shorted Gate Turn-Off Thyristor Types G2000HF450

Absolute Maximum Ratings

	VOLTAGE RATINGS	MAXIMUM LIMITS	UNITS
V_{DRM}	Repetitive peak off-state voltage, (note 1)	4500	V
V_{RSM}	Non-repetitive peak off-state voltage, (note 1)	4500	V
$V_{DC-link}$	Maximum continuous DC-link voltage	2800	V
V_{RRM}	Repetitive peak reverse voltage	18	V
V_{RSM}	Non-repetitive peak reverse voltage	18	V

	RATINGS	MAXIMUM LIMITS	UNITS
I_{TGQ}	Peak turn-off current, (note 2)	2000	A
L_s	Snubber loop inductance, $I_{TM}=I_{TGQ}$, (note 2)	200	nH
$I_{T(AV)M}$	Mean on-state current, $T_{sink}=55^{\circ}C$ (note 3)	890	A
$I_{T(RMS)}$	Nominal RMS on-state current, $25^{\circ}C$ (note 3)	1765	A
I_{TSM}	Peak non-repetitive surge current $t_p=10ms$, (Note 4)	13.7	kA
I_{TSM2}	Peak non-repetitive surge current $t_p=2ms$, (Note 4)	24.0	kA
I^2t	I^2t capacity for fusing $t_p=10ms$	938×10^3	A^2s
di/dt_{cr}	Critical rate of rise of on-state current, (note 5)	500	A/ μs
P_{FGM}	Peak forward gate power	120	W
P_{RGM}	Peak reverse gate power	12	kW
I_{FGM}	Peak forward gate current	60	A
V_{RGM}	Peak reverse gate voltage (note 6).	18	V
$T_{j op}$	Operating temperature range	-40 to +125	$^{\circ}C$
T_{stg}	Storage temperature range	-40 to +125	$^{\circ}C$

Notes:-

1) $V_{GK}=-2Volts$.

2) $T_j=125^{\circ}C$, $V_D=2800V$, $V_{DM} \leq 4500V$ $di_{GQ}/dt=30A/\mu s$, $I_{TGQ}=2000A$ and $C_S=4\mu F$.

3) Double-side cooled, single phase; 50Hz, 180° half-sinewave.

4) $T_{j(initial)}=125^{\circ}C$, single phase, 180° sinewave, re-applied voltage $V_D=V_R \leq 10V$.

5) $I_T=2000A$ repetitive, $I_{GM}=25A$, $di_{GM}/dt=20A/\mu s$. For $di/dt > 500A/\mu s$ please consult the factory.

6) May exceed this value during turn-off avalanche period.

Characteristics

	Parameter	MIN	TYP	MAX	TEST CONDITIONS	UNITS
V_{TM}	Maximum peak on-state voltage	-	-	3.5	$I_G=5A$, $I_T=2000A$	V
I_L	Latching current	-	40	-	$T_j=25^\circ C$	A
I_H	Holding current.	-	40	-	$T_j=25^\circ C$	A
dv/dt_{cr}	Critical rate of rise of off-state voltage	1000	-	-	$V_D=3000V$, $V_{GR}=-2V$	V/ μs
I_{DRM}	Peak off state current	-	-	60	Rated V_{DRM} , $V_{GR}=-2V$	mA
I_{RRM}	Peak reverse current	-	-	20	$V_{RR}=18V$	mA
I_{GKM}	Peak negative gate leakage current	-	-	20	$V_{GR}=-18V$	mA
V_{GT}	Gate trigger voltage	-	1.0	-	$T_j=-40^\circ C$	V
		-	0.8	1.0	$T_j=25^\circ C$ $V_D=25V$, $R_L=25m\Omega$	V
		-	0.6	-	$T_j=125^\circ C$	V
I_{GT}	Gate trigger current	-	8	-	$T_j=-40^\circ C$	A
		-	-	5	$T_j=25^\circ C$ $V_D=25V$, $R_L=25m\Omega$	A
		0.05	-	1	$T_j=125^\circ C$	A
t_d	Delay time	-	1.5	3	$V_D=2800V$, $I_{TGQ}=2000A$, $di_T/dt=200A/\mu s$, $I_{GM}=30A$, $di_G/dt=20A/\mu s$, $C_S=4\mu F$, $R_S=5\Omega$	μs
t_{gt}	Turn-on time	-	4.0	10		μs
E_{on}	Turn-on energy	-	-	1.3		J
t_f	Fall time	-	2	-	$V_{DM}=2800V$, $I_{TGQ}=2000A$, $di_{GQ}/dt=30A/\mu s$, $V_{GR}=-16V$, $C_S=4\mu F$	μs
t_s	Storage time	-	-	25		μs
t_{gq}	Turn-off time	-	-	30		μs
I_{GQM}	Peak turn-off gate current	-	600	-		A
Q_{GQ}	Turn-off gate charge	-	7	-		mC
t_{tail}	Tail time	-	8.5	-		μs
E_{off}	Turn-off energy	-	-	7		J
R_{thJK}	Thermal resistance junction to sink	-	-	22	Double side cooled	K/kW
		-	-	48	Cathode side cooled	K/kW
		-	-	42	Anode side cooled	K/kW
F	Mounting force	21	-	26	(see note 2)	kN
W_t	Weight	-	0.8	-		kg

Notes:-

1) Unless otherwise indicated $T_j=125^\circ C$.

2) For other clamping forces, consult factory.

Curves

Figure 1 - On-state characteristics of Limit device

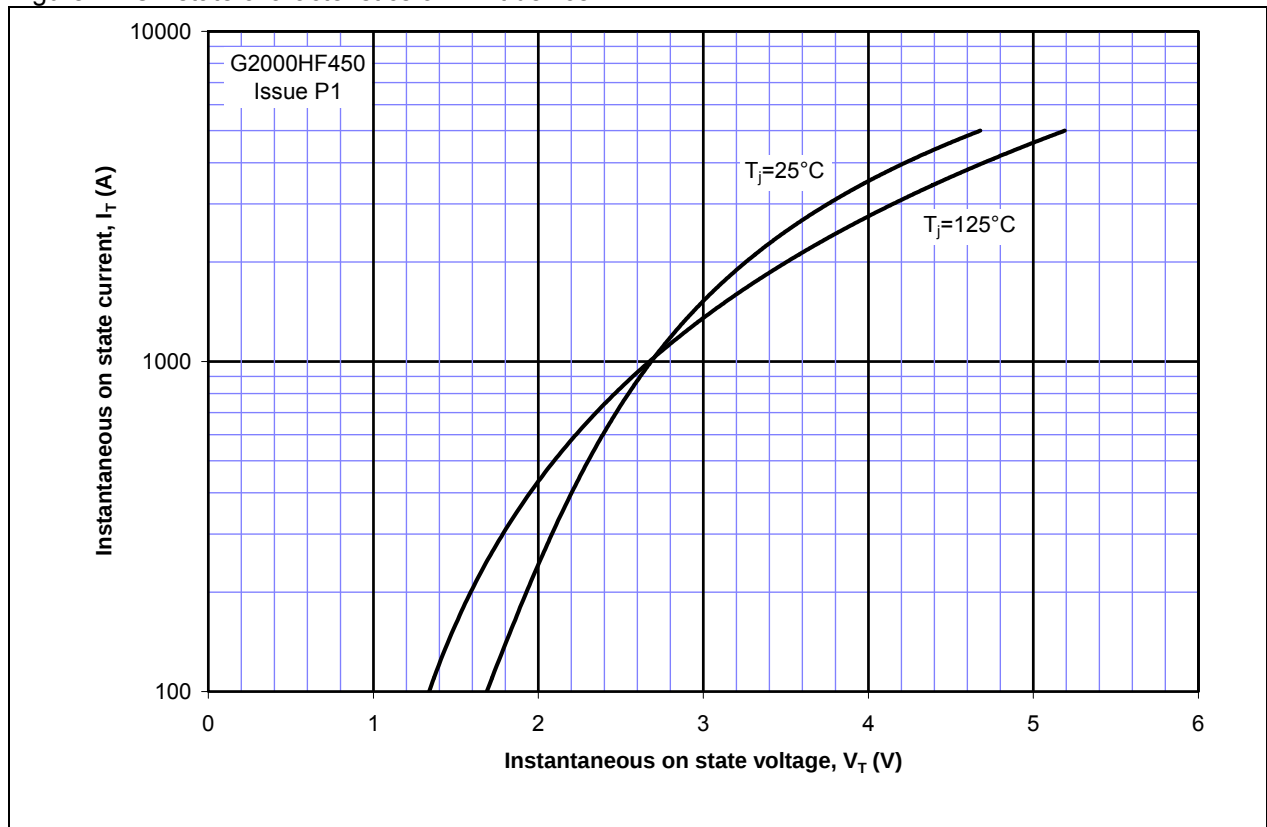


Figure 2 - Maximum surge and I^2t Ratings

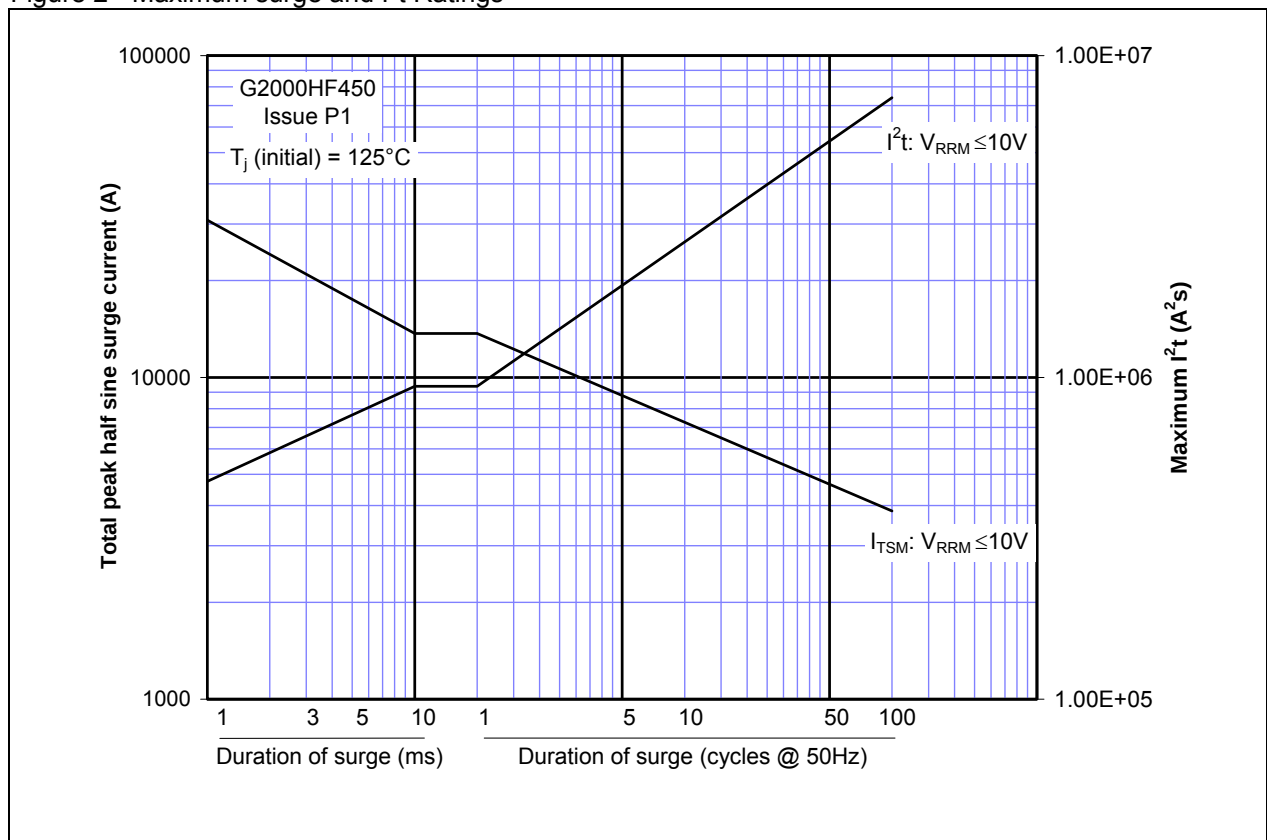
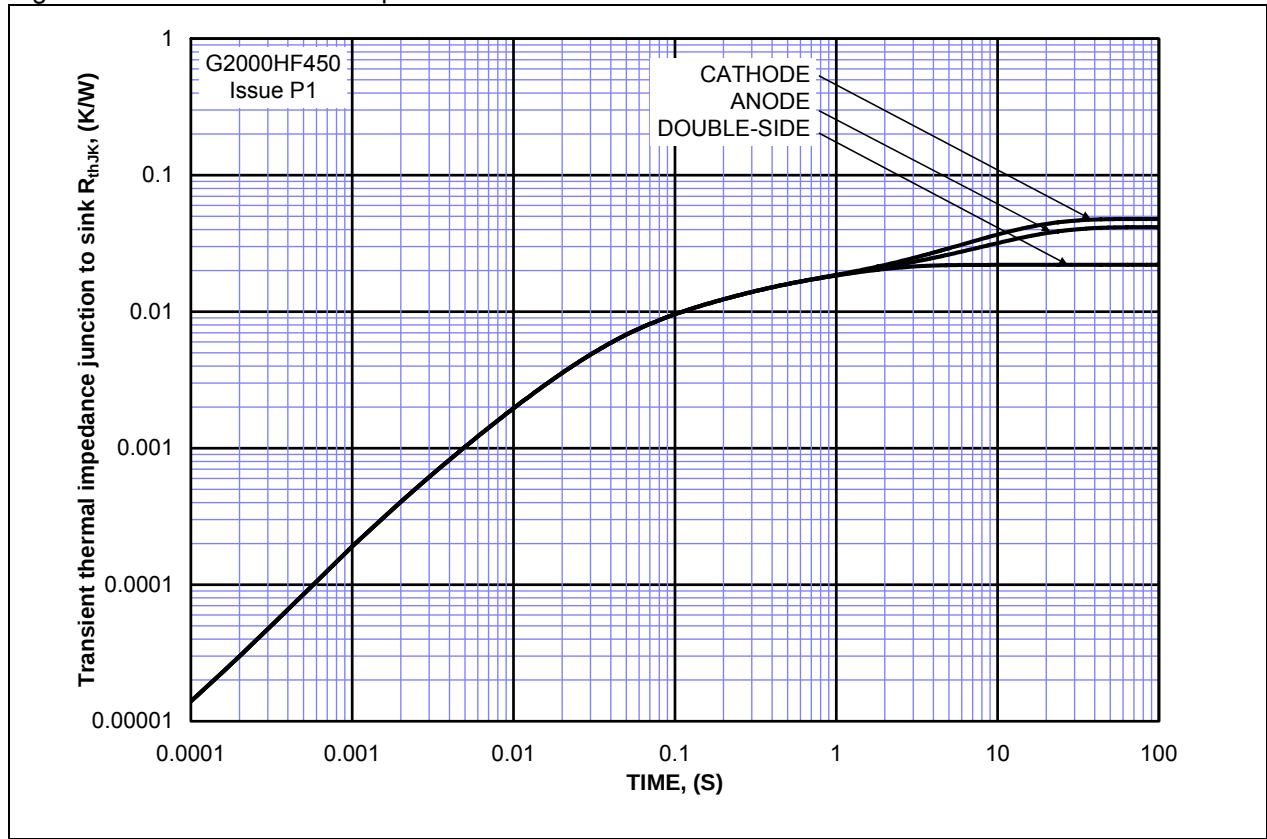
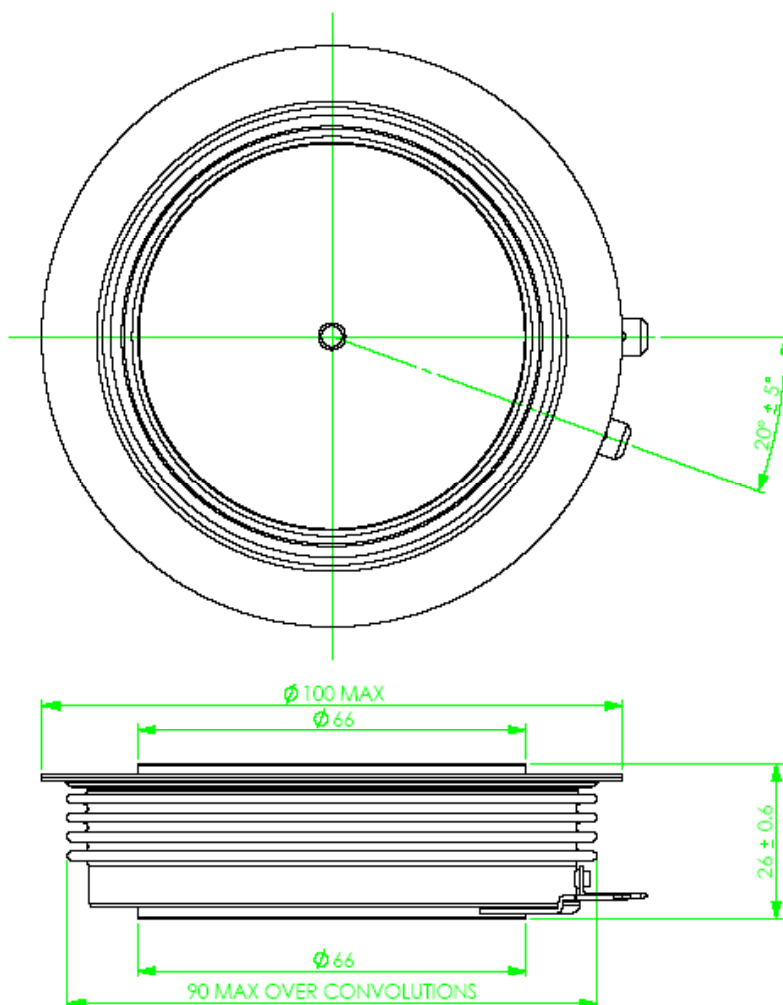


Figure 3 – Transient thermal impedance



Outline Drawing & Ordering Information



101A388

ORDERING INFORMATION

(Please quote 10 digit code as below)

G2000	HF	45	0
Fixed Type code	Outline code	Voltage code $V_{DRM}/100$	Fixed code

IXYS Semiconductor GmbH
Edisonstraße 15
D-68623 Lampertheim
Tel: +49 6206 503-0
Fax: +49 6206 503-627
E-mail: marcom@ixys.de



IXYS UK Westcode Ltd
Langley Park Way, Langley Park,
Chippenham, Wiltshire, SN15 1GE.
Tel: +44 (0)1249 444524
Fax: +44 (0)1249 659448
E-mail: sales@ixysuk.com

IXYS Corporation
1590 Buckeye Drive
Milpitas CA 95035-7418
Tel: +1 (408) 457 9000
Fax: +1 (408) 496 0670
E-mail: sales@ixys.net

www.ixysuk.com

www.ixys.com

IXYS Long Beach
IXYS Long Beach, Inc
2500 Mira Mar Ave, Long Beach
CA 90815
Tel: +1 (562) 296 6584
Fax: +1 (562) 296 6585
E-mail: service@ixyslongbeach.com

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